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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/027,071	12/20/2001	Joseph R. Ward	D5216	9833
30409	7590	08/12/2004	EXAMINER	
INTERNATIONAL ENGINE INTELLECTUAL PROPERTY COMPANY			KERNS, KEVIN P	
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P.O. BOX 1488			ART UNIT	
WARRENVILLE, IL 60555			PAPER NUMBER	
			1725	

DATE MAILED: 08/12/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/027,071

Applicant(s)

WARD, JOSEPH R.

Examiner

Kevin P. Kerns

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 26 July 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-5 and 9-17 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-5 and 9-17 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-5 and 9-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tache et al. (US 3,299,482) in view of Bostater et al. (US 4,493,359).

Tache et al. disclose a gray iron casting process and composition for making engine component parts by adding a tin alloying element, in which the composition includes (by weight percent): 3.05 to 3.45% carbon (carbon equivalent between 3.76 and 4.15%), 1.7 to 2.1% silicon, maximum 0.15% phosphorus, maximum 0.12% sulfur, 0.5 to 0.9% manganese, maximum 0.15% chromium, 0.05 to 0.08% tin, and balance iron (column 1, lines 11-16; column 3, lines 1-56 and 70-76; and column 4, lines 1-46). Preferably, the tin is added to the molten gray iron in the cupola during filling of the pouring ladles by addition of preweighed chunks of metallic tin in the range of 0.05 to 0.08% by weight, resulting in a molten alloy of tin with gray iron, followed by subsequent (as soon as possible) casting into mold(s) to produce the engine components (column 3, line 75; and column 4, lines 1-46). After the molten gray iron composition is

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poured into molds while the molten metal is at about 2550 to 2650 degrees F, the resulting casting is cooled and taken to core knockout and shakeout stations while the bores are still at temperatures of about 1450-1500 degrees F (column 1, lines 55-70). Although Tache et al. disclose a composition that includes silicon within the gray iron alloy, Tache et al. do not disclose the step of adding further silicon as an inoculant to the molten gray iron alloy.

However, Bostater et al. disclose a method for making cast iron engine blocks from a casting process with molten gray iron, in which a silicon-containing inoculant (foundry grade ferrosilicon containing 23% iron and 7.5% silicon, ranging from 100 to 300 ounces of inoculant per 1,600 pounds of molten metal) is added to a molten gray iron composition (that already contains silicon) and stirred within a casting ladle for subsequent pouring into casting molds (abstract; column 1, lines 6-13; column 3, lines 3-21 and 52-68; column 4, lines 1-3 and 50-60; column 5, lines 54-68; column 6, lines 1-15; column 7, lines 4-26; and Figure). A sample of molten metal in the holding furnace was taken periodically for thermal analysis to obtain control of the carbon equivalent value (at a desired level of about 4%) within the molten gray iron (column 5, lines 42-53; and Figure). Castings of various cross-sections, including those that have very thin walls which would otherwise have high casting scrap losses, are able to be produced due to the molten metal homogeneity and addition of silicon-containing inoculant, with the advantageous feature of achieving a low casting scrap rate of less than 5% (column 2, lines 21-45; column 3, lines 3-21 and 33-40; column 4, lines 44-65; column 5, lines 54-68; column 6, lines 1-15; and column 7, lines 23-

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39). The additional step of adding a silicon-containing inoculant is advantageous for producing gray iron castings of various cross-sections with a substantial increase in the uniformity of molten metal as poured (column 4, lines 44-49; column 5, lines 57-68; column 6, lines 1-15; and column 7, lines 23-40).

It would have been obvious to one of ordinary skill in the art at the time the applicant's invention was made to modify the gray iron casting process and composition for making engine component parts by adding a tin alloying element, as disclosed by Tache et al., by using the additional step of adding and stirring a silicon-containing inoculant to a molten gray iron composition that already includes silicon, as taught by Bostater et al., in order to produce gray iron castings of various cross-sections with a substantial increase in the uniformity of molten metal as poured (Bostater et al.; column 4, lines 44-49; column 5, lines 57-68; column 6, lines 1-15; and column 7, lines 23-40).

### ***Response to Arguments***

3. The examiner acknowledges the applicant's amendment received by the USPTO on July 26, 2004. The prior objection to claim 16 has been overcome by the applicant's amendment. Claims 1-5 and 9-17 remain under consideration in the application.

4. Applicant's arguments filed July 26, 2004 have been fully considered but they are not persuasive.

With regard to the applicant's arguments on pages 7-13 of the amendment/remarks, as well as its reference to the inventor's declaration under 37 USC 1.132, the examiner has previously addressed several critical issues (that the applicant also currently presents) in the final rejection mailed October 17, 2003, the advisory action mailed January 27, 2004, and the prior non-final Office Action mailed April 26, 2004. Additional comments to the currently presented applicant's remarks are as follows:

First, the applicant's amendments to the claim language ("consisting of" (claim 1) and "consists essentially of" (claim 15), which have been changed to "comprising" and "comprises", respectively) essentially revert to the previous "open-ended" claim language, for which arguments have been set forth in the prior Office Actions that address the open-ended "comprising" and "comprises" claim language.

Second, the limitation "as soon as possible" (as discussed on page 8 of applicant's remarks), when taken in view of a "pouring" step, does not set forth an inventive step, nor is it even quantitative. Furthermore, if molten metal is not poured "as soon as possible" from a pouring ladle (most of which were unheated at the time of both prior art references in the 35 USC 103(a) rejection), there is increased risk of oxide inclusions upon casting, as well as increased solidification of metal within the ladle, such that one of ordinary skill in the art would have recognized that pouring "as soon as possible" is an obvious course of action to take in practically any molten metal pouring process.

Third, the applicant (on pages 7 and 8 of the remarks) continues to argue about the comparative ranges of the elemental compositions. Regarding the ranges of elemental compositions (within the gray iron casting composition) cited in Tache et al., the applicant is citing phosphorus, sulfur, and chromium as examples on pages 7 and 8 of the remarks. However, all of these elements have ranges that overlap. For example, when Tache's chromium has a composition up to 0.15%, then 0% is inclusive of such a range, which is also less than the 0.1% disclosed by the applicant. It is respectfully asserted that the Tache et al. reference only lacks the step of silicon addition to the tin-alloyed gray iron metal. This concept is clearly taught by Bostater et al., and is deemed to cure the deficiencies of Tache et al. under 35 USC 103(a), as the significant step of adding silicon to a gray iron composition already containing silicon is clearly set forth by Bostater et al., for the purpose of producing gray iron castings of various cross-sections with a substantial increase in the uniformity of molten metal as poured (see paragraph 2 above).

5. In response to applicant's argument (on page 10 of the remarks) that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge

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gleaned only from the applicant's disclosure, such a reconstruction is proper.

See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

### ***Conclusion***

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dr. Kevin P. Kerns whose telephone number is (571) 272-1178. The examiner can normally be reached on Monday-Friday from 8:00am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Dunn can be reached on (571) 272-1171. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.



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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Kevin P. Kerns  
Examiner  
Art Unit 1725

KPK  
kpk  
August 8, 2004

**KILEY S. STONER**  
**PRIMARY EXAMINER**

*Kiley Stoner* 8/10/04